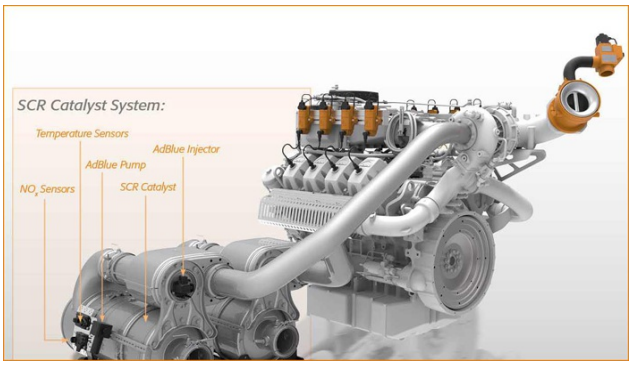
CAN Newsletter Online

EXHAUST AFTER-TREATMENT

Modular control system

Heinzmann has developed the Xios hardware platform to manage engine control tasks in special-purpose and rail vehicles, construction machines, ships, and stationary generators.

The scalable basic model offers various inputs and outputs and it can be expanded by up to 11 pluggable I/O modules. The bandwidth of the various I/O modules covers applications from inputs for temperature sensors to 4Q actuation of the actuators. Multiple controllers can be combined in the master-slave mode. This way, the available number of I/O channels can be expanded. As alternatives to Heinzmann's software applications, users can develop their own application. Based on Codesys or Matlab/Simulink functions and configurations for control and monitoring tasks can be created as needed and according to specific requirements. As communication interfaces, the controller offers two CAN, two Ethernet, one USB, one EIA-232, and one EIA-485 interfaces.



The Xios platform is used for example in an SCR control system (Photo: Heinzmann)

One of the successfully implemented projects based on the Xios platform is an SCR (selective catalytic reduction) control system. It helps to comply with the increasingly strict exhaust limit values for NOx in diesel and gasoline engines. The SCR of nitrogen oxides in the exhaust gas by means of urea injection in the form of Adblue is the present state of the art. The controller ensures optimum dosing of the urea solution at all operating points. The solution was developed specifically for use in special-purpose and rail vehicles, ships, and stationary industrial engines. During implementation, particular focus was placed on both minimizing initial investments as well as lowering ongoing operating costs.

The controller's CAN interface links the necessary sensors (Photo: Heinzmann)

For this purpose, the CAN network is able to record the process values. For example, the data of up to four NOx sensors, four exhaust gas temperature sensors, and other engine data such as boost and exhaust gas pressure, temperature, oil pressure, speed, etc. Following the analysis, up to two Adblue pumps and Adblue nozzles can then be actuated at the same time if needed. Comprehensive monitoring functions in the control system monitor the engine and catalyst systems to prevent damage. The integrated data logger records all system-relevant measured values in parallel. A tank management system also records the tank fill level and the Adblue temperature to ensure exhaust gas cleaning throughout the engine operating time.

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